By the end of this subject, students should be able to display a clear understanding of the state of the art of RE power generation technologies, the theoretical aspects of storage technologies and the impact of electric vehicles in the electric grid. The student will get a suitable knowledge about the following topics:

- Distributed Generation main concepts
- New generation technologies
- Wind power generation
- Biomass power
- Hydraulic Power
- Storage
- Electric vehicle regarding grid integration

Engineering analysis: Graduates will be able to demonstrate a clear understanding of the state of the art of RE power generation technologies and related aspects as storage or impact in the electric grid.

Transferable skills: Graduates will be able to work effectively as a professional and as team member in the resolution of technical problems. Also, graduates will demonstrate their abilities to communicate effectively in multinational groups.

Module contents

1. Basics aspects of Distributed Generation
   - Challenges of the SEP operation due to the high penetration of RES
   - Challenges and technological trends in the renewable energy grid integration
   - Advantages and disadvantages of distributed generation
   - Optimization of the integration of distributed generation
   - Marine and offshore technology generation and market
   - Visit to PV system facility
   - Applications of hydrogen and visit to the Hydrogen Foundation
   - Visit to a hydroelectric plant
   - Electric Vehicle
   - Wind prediction techniques

2. Storage
   - State of the art storage
   - Batteries
   - Flywheel
   - Storage systems based on ultra-capacitors

Reader’s advisory


Links

Language of instruction: English
Duration (semesters): 1 Semester
Module frequency: Jährlich
Module capacity: Unlimited
Modullevel: MM (Mastermodul)
Modulart: Pflicht
Lern-/Lehrform / Type of program: Lecture, Laboratory, Excursion, Tutorial
Vorkenntnisse / Previous knowledge

Examination
Time of examination: After end of lectures of module
Type of examination: Written exam (42.5%): 2 hours
Subject’s work (7.5%): approx. 4 hours
(Subject’s work refers to the different assignments that students are asked to finish after a preliminary session during the lessons)
Presentation (50%): 20 minutes (developed topic)

Course type: Seminar
SWS
Frequency  
Workload attendance  0 h